

## Screening and Brief Intervention for Alcohol Problems

A significant proportion of problems related to alcohol use—including motor vehicle crashes, other injuries, health problems, and family difficulties—occur in persons who are not alcohol dependent (Institute of Medicine 1990). In fact, estimates suggest that alcohol dependence is found in only one in four persons seen in primary care settings who drink above recommended limits of alcohol use (for men, more than two drinks per day or four per occasion; for women, more than one drink per day or three per occasion) (Manwell et al. 1998; National Institute on Alcohol Abuse and Alcoholism [NIAAA] 1995; U.S. Department of Health and Human Services 1996).

The recognition that alcohol-related problems are not limited to those who are alcohol dependent has important implications for the health care system in our Nation. It suggests that health care professionals need to switch from an exclusive focus on identifying and treating persons who are alcohol dependent to the inclusion of persons who are “at-risk” and problem drinkers.

In general patient care, the process of screening allows health care professionals to identify individuals who have, or who may be at risk for developing, particular health-related problems. Once a problem—or a level of increased risk—is found, steps can be taken to help the patient minimize or prevent future problems. Often this intervention takes the form of advice or counseling to encourage the patient to alter behaviors that are contributing to the problem. Such an intervention may be brief—taking only a few minutes—or may require more time to convey a number of health messages.

Screening for alcohol-related problems usually involves asking the patient questions about drinking through structured interviews or self-report questionnaires; it may also involve laboratory tests to detect abnormalities associated with excessive alcohol consumption. When

alcohol-related problems are identified, more detailed assessments are needed to specify the nature and extent of the problems so that appropriate treatment can be undertaken.

If the screening and assessment results indicate that a patient is an at-risk or problem drinker but not alcohol dependent, a brief intervention on the part of the health care provider can significantly reduce alcohol use and associated problems (Bien et al. 1993; Fleming et al. 1997; Wallace et al. 1988; Wilk et al. 1997). Although used most often with patients who are not alcohol dependent, brief interventions may also hold promise as part of a “stepped-care” approach that involves specialized treatment settings (Drummond 1997). This section summarizes recent developments in screening for alcohol-related problems and in using brief interventions to reduce patients’ risks for further problems.

### Screening for Alcohol Problems

A number of alcohol screening instruments have been tested and validated in clinical settings, including brief, structured interviews that contain questions on the quantity and frequency of drinking, questionnaires that can be self-administered or used in an interview by a health professional, and clinical laboratory tests. Although alcohol screening tests, like any screening tests, are not 100-percent accurate, the better instruments have high “sensitivity” and “specificity.” Sensitivity is a measure of an instrument’s accuracy in detecting persons with the problem in question. A tool with high sensitivity only rarely gives a “false-negative” result for someone who is actually positive. Conversely, specificity is a measure of how well the tool excludes people who do not have the problem; a tool with high specificity only rarely gives “false-positive” results. The strengths and weaknesses of a variety of alcohol screening interviews, questionnaires, and laboratory tests are briefly described.

### Interviews: Quantity-Frequency Questions

Currently, the standard of practice for most clinicians is to ask patients how much and how often they drink. To make the responses to these “quantity-frequency” questions uniform, a standard drink is defined as 12 grams of pure alcohol, which is equivalent to one 12-ounce beer or wine cooler, one 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits.

Quantity-frequency questions allow the clinician to estimate a patient’s risk directly. These types of questions are also easy to score and can be included as part of an office visit with minimum cost and effort. Examples of quantity-frequency questions are as follows:

- On average, how many days per week do you drink alcohol?
- On a typical day when you drink, how many drinks do you have?
- What is the maximum number of drinks you had on any given occasion during the last month?

The level of alcohol consumption that poses a risk for developing alcohol-related problems is different for men and women (NIAAA 1995). Whereas men may be at risk if they have more than 14 drinks per week or more than 4 drinks on one occasion, women’s risk is increased with more than 7 drinks per week or more than 3 drinks per occasion (NIAAA 1995).

Questions about the quantity and frequency of drinking have been shown to have high sensitivity in detecting persons who drink above recommended limits (Adams et al. 1996). Furthermore, physicians can use the patient’s response (for example, “I usually drink five or six beers a night”) to express drinking risks to patients in a straightforward and easily understood manner. For example, a physician can tell a man who reports drinking four or more standard drinks per day that he has twice the risk for developing stroke and liver failure compared with a man who consumes one or two standard drinks per day (Anderson et al. 1993).

The primary problem with quantity-frequency questions is that patients may understate their drinking, especially if they are alcohol dependent or are intoxicated at the time of the interview. Physicians can minimize this problem with drinkers suspected to be at high risk of alcohol problems by using appropriate interview techniques, such as taking a direct, non-judgmental approach; corroborating reported behaviors by asking family members or reviewing medical records; and using laboratory tests (the latter is discussed later in this section).

### Questionnaires

The limitations of quantity-frequency questions have led to the development of screening questionnaires designed for use in the primary care setting. Most of these questionnaires focus on the consequences of patients’ drinking and their perceptions of their drinking behavior (U.S. Preventive Services Task Force 1996). Six questionnaires whose effectiveness has been examined are described briefly below.

**CAGE.** The CAGE instrument is easy to use. It has been shown to be both sensitive and specific for identifying persons who meet criteria for alcohol abuse and dependence (Buchsbaum et al. 1991; Soderstrom et al. 1997). It consists of the following four questions; one or more “yes” answers increases the risk of alcohol-related problems in both genders:

In the past year,

- C** Have you ever felt you should Cut down on your drinking?
- A** Have people Annoyed you by criticizing your drinking?
- G** Have you ever felt bad or Guilty about your drinking?
- E** Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (Eye opener)?

The CAGE may be limited by its tendency to miss some at-risk drinkers (Adams et al. 1996). In addition, one study found that physicians prefer their own personal screening methods or clinical tests to the CAGE questions (Townes and Harkley 1994).

**AUDIT.** The Alcohol Use Disorders Identification Test was developed from a World Health Organization (WHO) collaborative project drawing from six countries (Allen et al. 1997; Saunders et al. 1993). Designed to detect hazardous alcohol consumption, the AUDIT is a 10-item questionnaire that inquires about patients' alcohol consumption, drinking behavior, and alcohol-related problems over the past year. Three of the questions in the AUDIT are drawn from the CAGE questionnaire (CAGE questions C, A, and E); the other seven questions concern the frequency and quantity of drinking, binge drinking (defined as having six or more drinks on a single occasion), blackouts, receiving advice from a health care professional regarding alcohol use, alcohol-related injury, and neglect of responsibilities due to alcohol use.

The AUDIT has a sensitivity of 50 to 80 percent; this means that, if 10 persons who have alcohol problems are screened, the test will most likely identify 5 to 8 of them. The test's sensitivity varies, however, depending on the study population and the cutoff score used (Barry and Fleming 1993; Bohn et al. 1995). One limitation of the AUDIT is that it may be less effective for detecting alcohol problems among people who barely meet the criteria for at-risk drinking. These include individuals who have two to three drinks per day and engage in binge drinking once or twice per week (Schmidt et al. 1995). In addition, the AUDIT definition of binge drinking—six or more drinks on one occasion—is well above current at-risk drinking levels (more than four drinks per occasion for men and more than three drinks per occasion for women) (NIAAA 1995). Finally, the length of the AUDIT may make its administration cumbersome for some physicians or patients. Because of these limitations, the AUDIT may be less useful as a primary screening tool and more useful for

assessing patients after a possible problem has been discerned by other methods.

**Health Screening Survey and Questionnaire.** The Health Screening Survey (Fleming and Barry 1991a) and the Health Screening Questionnaire (Wallace and Haines 1985) include questions about alcohol use as well as other health questions (for example, on smoking, weight, exercise, and depression). Researchers have tested both the survey and the questionnaire in primary care settings and have found both instruments to have adequate sensitivity and specificity (Cutler et al. 1988; Fleming and Barry 1991a).

**PRIME-MD.** A relatively new instrument, the Primary Care Evaluation of Mental Disorders (PRIME-MD) (Spitzer et al. 1994), includes the four CAGE questions and two questions on alcohol consumption. Clinicians use the PRIME-MD to screen patients for mental health and alcohol use disorders. A recent study evaluated telephone-assisted computer administration of the PRIME-MD, in which patients responded to questions over the telephone through the use of interactive voice-response technology (Kobak et al. 1997). The authors concluded that telephone-assisted computer administration of the PRIME-MD is more sensitive than face-to-face administration by a clinician.

**Trauma Scale.** The five-question Trauma Scale (Skinner et al. 1984) has been found to be more sensitive than laboratory tests in detecting genuine cases of problem drinking. The instrument is also specific in ruling out "social," non-problem drinkers. The questions on the Trauma Scale concern fractures or dislocations, involvement in motor vehicle crashes, head injury, and injuries sustained in assaults or fights or after drinking. Clinicians can better identify cases of excessive alcohol use with this scale by adding a few questions on alcohol abuse and performing some laboratory studies.

**T-ACE and TWEAK.** The T-ACE (Sokol et al. 1989) and the TWEAK (Russell et al. 1994, 1997) tests were developed specifically to screen for alcohol problems in pregnant women. (See Table 2 of the

section “Issues in Fetal Alcohol Syndrome Prevention” in the chapter on prenatal exposure to alcohol.) Both tests have been validated separately and have been found to be more sensitive than the CAGE questionnaire, in that they are capable of identifying more than 80 percent of women who are drinking above recommended limits (Chan et al. 1993; Chang et al. 1997).

### Laboratory Tests

Physicians can uncover patients’ drinking problems through the use of biological analyses such as blood and breath tests, although such tests are often underused in clinical settings (Cherpitel 1989). Obtaining blood alcohol concentrations is particularly important in emergency departments, trauma centers, and other acute care settings for confirming patient self-reports and for managing patients who are to undergo surgery. For screening purposes in primary care settings, however, laboratory tests have not been found to be sensitive or specific, in that they identify only about 10 to 30 percent of problem drinkers (Hoeksema and de Bock 1993; U.S. Preventive Services Task Force 1996).

Blood can also be tested for concentrations of an enzyme called gamma-glutamyltransferase (GGT; an indicator of liver injury) and for mean corpuscular volume (an estimate of the volume of red blood cells), which is often elevated in alcohol-dependent persons. These blood tests are not recommended for routine screening, however, because they may not be accurate enough for use in general clinic populations (Beresford et al. 1990; Bernadt et al. 1982).

Another blood test, the carbohydrate-deficient transferrin (CDT) assay, helps to identify men who have been drinking more than five standard drinks per day for a year or more. This assay may also help to monitor a patient’s abstinence (Huseby et al. 1997). However, the test is not widely available and it has been found to perform poorly in women (Gronbaek et al. 1995; Stauber et al. 1996), binge drinkers (Lott et al. 1998), people with liver disease (Stauber et al. 1995), and those who have been drinking intermittently

in the past 12 months (Anton and Bean 1994). For these reasons, the CDT assay may be more useful for monitoring relapse among high-risk patients than in routine screening of general clinical populations.

For persons who screen positive through a questionnaire, interview, or laboratory test, several psychological assessment methods can be used by clinicians to develop a treatment plan. A number of pencil-and-paper questionnaires are available to assess alcohol-related problems and physical dependence; two examples are the Short Michigan Alcoholism Screening Test (S-MAST) (Selzer et al. 1975), a 13-question instrument widely tested in clinical settings (Fleming and Barry 1991*b*), and the Short Alcohol Dependence Data Questionnaire (SADD) (Davidson and Raistrick 1986), a 15-item assessment of dependence severity that has been widely used in alcohol treatment studies. In addition, patients with alcohol problems should be assessed for mental health disorders (Helzer and Pryzbeck 1988), because the prevalence of depression, anxiety disorders, and other mental health problems is high among people with alcohol dependence, especially women (Barry et al. 1997; Rowe et al. 1995).

### Brief Intervention

Brief interventions are time-limited counseling strategies that are especially useful in busy, high-volume health care practices, where physicians are often pressed for time and have multiple priorities. These techniques can be used to reduce alcohol use in patients who drink but who are not alcohol dependent (Fleming et al. 1997). They may also be helpful in motivating patients with alcohol dependence to seek specialized alcohol treatment.

In a brief intervention, the health care provider basically follows three steps (NIAAA 1995):

- State the medical concern. This is typically done by providing direct feedback, such as, “As your physician, I am concerned about how much you drink and how it is affecting your health.”



- Advise the patient to abstain from alcohol use (if alcohol dependent) or to cut down (if not).
- Agree on a plan of action. This may be done by making an informal “contract” or agreement with the patient that sets specific goals, such as a certain number of drinks per week.

A health care provider who employs a brief intervention can also offer patients techniques to help them modify their behavior. This might consist of having patients make a list of situations in which they typically lose control of their drinking, then helping them to devise ways to avoid those situations. The health care provider may also suggest self-help material for the patient to read.

### **Effectiveness of Brief Intervention**

A substantial body of research indicates that brief interventions are a valuable resource for reducing patients' problems with alcohol (Bien et al. 1993; Kahan et al. 1995; Wilk et al. 1997). One study (Bien et al. 1993) analyzed 32 trials of brief interventions and found that most of these efforts had positive results, reducing alcohol use by up to 30 percent. Another analysis of 12 controlled trials (Wilk et al. 1997) found that drinkers who received brief interventions were almost twice as likely as those not receiving an intervention to reduce or moderate their drinking in the subsequent 6 to 12 months. This effect was consistent among both men and women and in various clinical settings. The intervention procedures used in these studies differed, but most involved an initial counseling session lasting 5 to 20 minutes and one or more follow-up sessions.

Researchers have studied brief interventions in hospitals (Chick et al. 1988), in primary care clinics (Fleming et al. 1997; Israel et al. 1996; Wallace et al. 1988), on college campuses (Marlatt et al. 1995, 1998), in clinical research settings (Miller and Sovereign 1989), and in urgent care settings (Gentilello et al. 1995, 1999). The studies described here are notable for clarifying the role of brief interventions in the prevention and treatment of alcohol use disorders.

### **Brief Intervention in Family Practice Settings**

Findings from three large, randomized, controlled clinical trials support the use of brief interventions in the family medicine setting. In the first study, conducted in the United Kingdom, researchers randomly assigned 909 patients to the control group or to the intervention group, which received two 5- to 10-minute visits with a general practitioner and two 5-minute follow-up telephone calls by nurses (Wallace et al. 1988). During the visits, patients were given written materials and advised to reduce their alcohol use. One year later, the intervention group had significantly reduced their drinking levels compared with the control group. In addition, men receiving the intervention showed improved health through lower levels of the liver enzyme GGT and reduced blood pressure.

The second trial, Project TrEAT (Trial for Early Alcohol Treatment), was designed to replicate the British study and to test the hypothesis that physicians can be trained to effectively deliver a brief intervention protocol within the constraints of a health maintenance organization-based health care system (Fleming et al. 1997). Sixty-four physicians (family physicians or general internists) from 17 clinics participated in the study, attended training sessions, and delivered brief interventions to patients who had scored positive for problem drinking on a screening survey. The interventions included two 10- to 15-minute physician visits as well as two 5-minute follow-up calls from nurses, and involved offering feedback, comparing each individual's drinking habits with drinking norms, contracting with the patients, and reviewing a patient-centered workbook.

The researchers were able to retain 93 percent of the 774 patients in Project TrEAT to the end of the 12-month follow-up. Both the intervention and the control groups showed significant reductions in drinking over time, but subjects in the intervention group showed a greater reduction in their alcohol use at 12 months than did those in the control group. In the intervention group, binge drinking within the previous 30 days was decreased by 35 percent (33 percent for men and 37 percent for women), and drinking excessively

within the previous 7 days was reduced by 63 percent (60 percent for men and 66 percent for women).

A third trial examined the effect of brief counseling interventions, delivered as part of routine primary care by physicians and nurse practitioners, in reducing alcohol consumption by high-risk drinkers (Ockene et al. 1999). The researchers randomly assigned 46 physicians and nurse practitioners at primary care practice sites to provide either a brief intervention or usual care. The intervention providers were trained in a brief (5- to 10-minute) patient-centered counseling intervention and in the use of an office support system that screened patients, cued the providers to intervene, and offered patient education materials. The usual care providers were encouraged to identify and intervene with their alcohol-using patients in any way they thought appropriate; their patients received a booklet on general health issues (the same booklet was given to the intervention patients) and were told that they could discuss any questions they might have with their providers. The researchers enrolled 530 high-risk drinkers in this study and retained 91 percent of them across the 6-month follow-up period.

Results showed that weekly alcohol consumption dropped in both the usual care and the intervention group, but that the intervention group had a significantly larger reduction, averaging 5.8 fewer drinks per week compared with 3.4 fewer drinks per week for the usual care group. This trial provides evidence that screening, very brief advice (5 to 10 minutes), and counseling delivered by a physician or nurse practitioner as part of routine primary care can significantly reduce alcohol consumption by high-risk drinkers.

### **Brief Intervention in Emergency Care Settings**

The efficacy of brief intervention in emergency care settings, such as hospital emergency departments and trauma centers, is a relatively new area of research. One recent study—a randomized, prospective, controlled trial—examined alcohol intake in 762 patients who had been admitted to a trauma unit for treatment of injuries (Gentilello

et al. 1999). The patients had screened positive for alcohol problems by measurement of blood alcohol concentrations and serum GGT and by administration of the S-MAST. They were then randomly assigned to a control group or a group receiving a single motivational interview with a psychologist trained in the use of brief interventions. Patients were given personalized feedback about their drinking patterns compared with national norms, their level of intoxication at admission, and the negative consequences of drinking. Emphasis was placed on the patient's assumption of personal responsibility for reducing drinking in order to decrease his or her risk level. A number of strategies were then offered to assist the patient's attempts to change his or her drinking behavior, and follow-up sessions were conducted 6 and 12 months later.

Among the 304 patients for whom the intervention was completed, alcohol consumption was decreased significantly at 12 months compared with the control group. At 6 months, patients in the intervention group had 47 percent fewer new injuries than control patients and had decreased their alcohol consumption by 22 standard drinks per week. In contrast, the control group had decreased their drinking by only about 7 drinks per week. The difference in alcohol intake was most pronounced in patients with drinking problems in the mild-to-moderate range as determined by the S-MAST; no benefit was seen in patients with very high S-MAST scores. Perhaps the most notable result of this study was that, at 12 months, the intervention group had continued to decrease their alcohol intake, whereas the control group had returned to the level at which they had been drinking at the start of the study.

A second recent study evaluated the use of a brief motivational intervention to reduce alcohol-related consequences and use among adolescents treated in an emergency room following an alcohol-related event (Barnett et al. in press; Monti et al. 1999). The researchers randomly assigned 94 patients aged 18 or 19 years to receive either the intervention or standard care. In the emergency room, an assessment and the intervention (a 30-minute session delivered by

a project staff member) were conducted during or after the patient's medical treatment. Follow-up assessments at 6 months showed that both the intervention and the standard care groups had reduced their levels of consumption, but that the patients who received the brief intervention also had significantly lower rates of other alcohol-related problems (such as drinking and driving, traffic violations, and alcohol-related injuries) than did patients who received standard care.

Another study, Project ASSERT (an acronym for "improving Alcohol and Substance abuse Services and Educating providers to Refer patients to Treatment"), tested the feasibility of using the emergency room visit as an opportunity to facilitate access to substance abuse treatment for patients with alcohol and other drug problems (Bernstein et al. 1997). In this case, the brief intervention was not the treatment itself, but instead a means of linking patients to more traditional substance abuse treatment. Emergency department staff screened patients for problems related to alcohol and other drug use. They then directed those who screened positive to trained "health promotion advocates" who assessed the problem severity, evaluated the patients' readiness to change, presented options for substance abuse treatment, and provided referrals to support services and treatment. A follow-up interview was conducted at 60 days. Although there was no control group, the 245 patients who returned a scheduled follow-up visit demonstrated a 56-percent reduction in alcohol use and a 64-percent reduction in heavy drinking (defined in the study as having six or more drinks on one occasion). This program demonstrates an innovative approach with great potential for identifying and referring patients seen in emergency departments.

### **Comparison With More Lengthy Counseling**

Yet to be determined are the optimal length of an intervention and the optimal number of contacts with the patient for the intervention to be effective. Two studies provide some information in this area. The first studied drinking patterns in eight countries (WHO 1996); the second took place in primary care practices in a small

community outside Toronto, Canada (Israel et al. 1996). The international study, conducted by the WHO Brief Intervention Study Group, found no difference between a group receiving "simple advice" and a second group receiving "brief counseling" with more extensive intervention (WHO 1996). In contrast, results of the Canadian study suggest that multiple counseling sessions have a stronger treatment effect than a single visit for brief advice (Israel et al. 1996).

In the WHO study, nurses, physicians, psychologists, and other professionals provided the interventions, in which 1,260 men and 299 women were randomly assigned to one of the two intervention groups or a control group. Eligibility criteria included having more than five drinks (for men) or more than three drinks (for women) per occasion. Persons with a history of serious mental illness, liver damage, or previous alcohol treatment were among those excluded from the study.

In the core design of the WHO study, the control group simply received a 20-minute health interview. Within the two intervention groups, those in the simple advice group received the same interview plus 5 minutes of advice and a pamphlet, and those in the brief counseling group received the interview plus 15 minutes of counseling and the same pamphlet, which referred to a 30-page manual. Five of the eight participating centers also offered extended counseling (up to three follow-up sessions) for the brief counseling group. Follow-up averaged 9 months, and the overall dropout rate was 25 percent.

The WHO study found that the average amount of alcohol consumed daily was 17 percent lower for men in the intervention groups than for those in the control groups (WHO 1996). Among women, there were no such differences between the intervention and the control groups, although both intervention and control groups showed significant reductions in drinking over time.

In the smaller Canadian study, which retained 72 of 105 original patients for the 12-month follow-up, researchers sought to determine

whether a single brief-advice message was as effective as six counseling sessions delivered over the course of 1 year (Israel et al. 1996). In the group receiving brief advice, a nurse recommended reduced alcohol consumption, provided a pamphlet with guidelines for achieving abstinence or acceptable drinking, and gave feedback about the patient's GGT level. In the counseling group, a nurse provided the same pamphlet as that given to the brief-advice group and augmented it with as many as six 30-minute counseling sessions. Although the absence of a "no advice" group is a potential limitation of the study, the researchers found that the counseling group did significantly better than the brief-advice group in terms of alcohol use and illness. At the 1-year follow-up, the brief-advice group reported a 46-percent reduction in their alcohol use (from 139 to 75 drinks per 4 weeks), while the counseling group reported a 70-percent reduction (from 152 to 46 drinks per 4 weeks).

### **Brief Intervention in Special Populations**

Several U.S. trials have tested the efficacy of brief interventions in special populations, including college students, pregnant women, Mexican Americans, and older adults.

Two studies of college students have found that brief interventions can reduce alcohol use and alcohol-related problems over the long term. In the first study, the researchers randomly assigned 348 heavily drinking students to a control group or to a brief intervention group (Marlatt et al. 1995). The intervention included a 1-hour counseling session with personalized feedback and a discussion of drinking risks and norms. The researchers followed the students for 24 months, retaining 88 percent of them until the end of the study. The results were modest but statistically significant for both reduced alcohol use and less frequent binge drinking. The reduction was greatest for alcohol-related problems as opposed to alcohol use itself. The participants most resistant to change were fraternity members and men with a history of conduct disorders.

A more recent study differed in that, instead of using students already on campus, the researchers

recruited students prior to the freshman year by sending a questionnaire to high school seniors who had been accepted to a State university (Marlatt et al. 1998). From a group of 2,041 students who responded to the questionnaire, 366 high-risk drinkers were randomly assigned to receive a brief intervention in the winter term of their freshman year, a time of both high risk and potentially high receptiveness to prevention messages. Another 115 students, randomly selected from the original group of 2,041 and representing drinkers at all risk levels, were assigned to a comparison group that provided a "natural history" with which drinking changes in the intervention group could be compared over time. The intervention in this study consisted of individual motivational interviews and personalized reports in which students were provided with feedback about their drinking patterns, risks, and beliefs about alcohol's effects. Overall, the high-risk students in both the intervention and the comparison groups drank less and reported fewer alcohol-related problems over the 2 years of the study. Reductions were greater, however, among the intervention group than among the comparison group at all assessment points (6 months, 1 year, and 2 years) (Marlatt et al. 1998).

In the first brief intervention trial for pregnant women (Chang et al. 1999), a control group received a 2-hour assessment only, and an experimental group received a 2-hour assessment plus an intervention delivered by a physician. Pregnant women in their second trimester were eligible to participate in this study if they had a positive score on the T-ACE. Despite this requirement, by the time they were randomly chosen for the control or the experimental group, more than half (57 percent) of the participants were abstaining from alcohol. The results showed that both groups significantly reduced their alcohol use, and the difference between the intervention and control groups was minimal. Overall, the 107 women who were drinking at the time random selection took place reduced their alcohol use by 67 percent (from an average of 1.8 drinks per drinking day to 0.6) between assessment and delivery. It is possible that the



intervention had no significant effect in this study because the 2-hour assessment period already accomplished the intended effect. Other possible explanations for the lack of treatment effect are the fairly high rate of abstinence among the women at the time of random assignment, as well as the tendency of many women to reduce drinking during pregnancy (Chang et al. 1998).

In a trial at a family medicine teaching clinic in Texas, participants included 175 Mexican Americans who screened positive for alcohol abuse or dependence (Burge et al. 1997). Researchers randomly assigned patients to groups that received counselor-led patient education, physician intervention, both of these interventions, or neither. More than three-fourths of the participants completed an 18-month follow-up session in which researchers evaluated changes in alcohol use, alcohol-related problems, and GGT levels. In this study, all of the groups demonstrated significant improvement over time, with little difference between the intervention and control groups. As with the study just mentioned (Chang et al. 1998), the results suggested that for the control group, the assessment procedure itself may have served as a brief intervention.

Project GOAL (Guiding Older Adult Lifestyles) was the first clinical trial to use a brief intervention with older adults who were problem drinkers (Fleming et al. 1999). The project, which included 153 patients aged 65 and older, tested the efficacy of a brief intervention provided by 43 physicians in 24 community-based practices in Wisconsin. The physician's intervention consisted of two 10- to 15-minute counseling visits using a scripted workbook that included advice, education, and contracting information. The researchers randomly assigned 105 men and 53 women to intervention or control groups and followed their progress for 12 months, retaining 146 (92.4 percent) for the full year of follow-up. Compared with the control group, the patients who received the physician intervention showed significant reductions in alcohol use in the past week, episodes of binge drinking, and frequency of excessive drinking at 3, 6, and 12 months

after the intervention. This study provides the first direct evidence that brief physician advice can decrease alcohol use by older adults in community-based primary care practices.

## Areas for Future Research

The preponderance of the available evidence indicates that brief interventions delivered in primary care settings can decrease alcohol use for at least 1 year in persons who drink above recommended limits. Nevertheless, more research is needed to increase understanding of important related issues. Some of the remaining questions include identifying the essential components of a brief intervention in terms of its content, length, number of sessions, and the role of the health professional delivering it. Further studies are also needed on whether brief interventions have a role in treating alcohol-dependent patients, and whether they should be used routinely in hospital emergency departments and trauma centers as well as in primary care settings. Finally, questions remain as to whether brief interventions reduce morbidity, mortality, use of health services, and costs in the community as a whole.

## Essential Components of Brief Intervention

The essential elements of brief intervention protocols, as well as the terms used to describe brief interventions, vary by trial. The protocols used in the large community-based trials to date are primarily physician centered, providing information and advice rather than patient-centered counseling (Fleming et al. 1997; Kristenson et al. 1983; Wallace et al. 1988; WHO Brief Intervention Study Group 1996). Although the WHO trial (WHO 1996) suggests that simple advice may be as effective as brief counseling, the relative importance of patient-centered techniques (such as motivational interviewing and cognitive-behavioral treatment) compared with physician-centered advice is not yet clear. In addition, other aspects of brief intervention that need to be defined are the length of the intervention, the number of contacts, and the importance of continuity of care in terms of the involvement of personal

physicians versus additional involvement by nurses, psychologists, and other health care personnel.

### **Brief Intervention in Alcohol-Dependent Patients**

At this time, evidence is not sufficient to support the replacement of traditional outpatient counseling for alcohol-dependent patients with brief intervention in a primary care setting. Of interest for future research, however, is the question of whether brief interventions could be used as part of a stepped-care approach for alcohol-dependent patients (Drummond 1997). In such an approach, the level of intensity of an intervention would be tailored according to each patient's needs.

### **Effects of Brief Intervention on Community Health**

Two studies (Fleming et al. 1997; Kristenson et al. 1983) have shown that brief interventions can decrease the overall use of health services in communities. Information is limited in this area, however, as well as on the cost-effectiveness of alcohol screening and brief intervention (see the section "Cost Research on Alcoholism Treatment" in the chapter on economic and health services perspectives). Especially in the current managed health care environment, knowledge of the cost-effectiveness of screening and brief intervention would be particularly valuable.

### **Improving Physicians' Use of Brief Intervention**

Research devoted to finding ways to encourage physicians to use brief interventions more widely indicates that routine educational approaches may not be effective. In a systematic review of continuing medical education strategies, programs using peer discussion and sessions for practicing skills were more effective than formal courses with lectures and handouts, which had limited effect (Davis et al. 1995). In that review, several group education strategies were found to be effective: (1) conducting on-site educational programs at the clinic or hospital; (2) using specific, step-by-

step, evidence-based clinical protocols; (3) skills-based role playing; (4) holding peer group discussions; and (5) using a credible expert trainer or educator. Brevity, repetition, and reinforcement of recommended practices have been identified as key program elements (Soumerai and Avorn 1990). For guidance, physicians may also consult NIAAA's *Physicians' Guide* (NIAAA 1995) and *A Medical Education Model for the Prevention and Treatment of Alcohol Use Disorders* (Fleming and Murray 1998).

Research suggests that health care organizations might consider peer review feedback, such as confidential performance reviews based on audits of medical records or written feedback by quality assurance committees, as one way of improving physician performance. In a relevant study, 31 providers (faculty, residents, and advanced nurse practitioners) underwent training in brief-advice counseling for patients with alcohol use disorders (Ockene et al. 1997). The researchers found significant increases in skills, attitudes, and knowledge on the part of the clinicians after they had participated in a 90-minute training workshop and a 30-minute, one-on-one feedback session 2 to 6 weeks later.

Another strategy for increasing the use of both screening and brief interventions is to develop and evaluate clinic-level systems, which take into account the complexity of implementing new clinical activities into a busy practice and the need to make them a systematic part of routine care. A clinic-based system requires active participation of all members of the clinic staff, not just the individual clinician. Components of a comprehensive clinic-based program might include, for example:

- A pencil-and-paper questionnaire, perhaps with alcohol questions embedded in a general health survey, provided by a nurse or receptionist.
- A readily available assessment tool, such as the AUDIT, S-MAST, or SADD.
- A computerized reminder system, maintained by clerical staff, to remind the physician to

screen or follow up on a previous treatment recommendation.

- Documentation of clinical protocols for brief intervention.
- A current list of local alcohol specialists, Alcoholics Anonymous or Al-Anon meetings, and community support agencies.

## In Closing

The U.S. health care system offers a great opportunity to identify and treat the majority of people in our Nation who are adversely affected by alcohol use disorders. A number of screening tests can help to identify at-risk drinkers, and research suggests that brief advice and counseling can reduce their levels of drinking and health care utilization. The challenge, however, is to incorporate alcohol screening and brief intervention practices in the context of other clinical activities and prevention programs in these systems of care. For example, screening for immunization status, breast cancer, colon cancer, prostate cancer, cholesterol levels, and smoking status have become high priorities in many managed care systems. Alcohol screening and intervention will need to fit in with these other procedures and compete with other priorities. Changing systems of health care is a complex endeavor, similar to changing patient alcohol use—education is a critical first step, but the next, and far more difficult step, is taking action.

## References

- Adams, W.L.; Barry, K.L.; and Fleming, M.F. Screening for problem drinking in older primary care patients. *JAMA* 276(24):1964–1967, 1996.
- Allen, J.P.; Litten, R.Z.; Fertig, J.B.; and Babor, T. A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcohol Clin Exp Res* 21(4):613–619, 1997.
- Anderson, P.; Cremona, A.; Paton, A.; Turner, C.; and Wallace, P. The risk of alcohol. *Addiction* 88(11):1493–1508, 1993.
- Anton, R., and Bean, P. Two methods for measuring carbohydrate-deficient transferrin in inpatient alcoholics and healthy controls compared. *Clin Chem* 40(3):364–368, 1994.
- Barnett, N.P.; Monti, P.M.; and Wood, M.D. Motivational interviewing for alcohol-involved adolescents in the emergency room. In: Wagner E.F., and Waldron, H.B. *Innovations in Adolescent Substance Abuse Intervention*. In press.
- Barry, K.L., and Fleming, M.F. The Alcohol Use Disorders Identification Test (AUDIT) and the SMAST-13: Predictive validity in a rural primary care sample. *Alcohol Alcohol* 28(1):33–42, 1993.
- Barry, K.L.; Fleming, M.F.; Manwell, L.B.; and Copeland, L.A. Conduct disorder and antisocial personality in adult primary care patients. *J Fam Pract* 45(2):151–158, 1997.
- Beresford, T.P.; Blow, F.C.; Hill, E.; Singer, K.; and Lucey, M.R. Comparison of CAGE questionnaire and computer-assisted laboratory profiles in screening for covert alcoholism. *Lancet* 336(8713):482–485, 1990.
- Bernadt, M.W.; Mumford, J.; Taylor, C.; Smith, B.; and Murray, R.M. Comparison of questionnaire and laboratory tests in the detection of excessive drinking and alcoholism. *Lancet* 1(8267):325–328, 1982.
- Bernstein, E.; Bernstein, J.; and Levenson, S. Project ASSERT: An ED-based intervention to increase access to primary care, preventive services, and the substance abuse treatment system. *Ann Emerg Med* 30(2):181–189, 1997.
- Bien, T.H.; Miller, W.R.; and Tonigan, J.S. Brief interventions for alcohol problems: A review. *Addiction* 88(3):315–335, 1993.
- Bohn, M.J.; Babor, T.F.; and Kranzler, H.R. The Alcohol Use Disorders Identification Test (AUDIT): Validation of a screening instrument for use in medical settings. *J Stud Alcohol* 56(4):423–432, 1995.

- Buchsbaum, D.G.; Buchanan, R.G.; Centor, R.M.; Schnoll, S.H.; and Lawton, M.J. Screening for alcohol abuse using CAGE scores and likelihood ratios. *Ann Intern Med* 115(10): 774–777, 1991.
- Burge, S.K.; Amodei, N.; Elkin, B.; Catala, S.; Andrew, S.R.; Lane, P.A.; and Seale, J.P. An evaluation of two primary care interventions for alcohol abuse among Mexican-American patients. *Addiction* 92(12):1705–1716, 1997.
- Chan, A.W.; Pristach, E.A.; Welte, J.W.; and Russell, M. Use of the TWEAK test in screening for alcoholism/heavy drinking in three populations. *Alcohol Clin Exp Res* 17(6):1188–1192, 1993.
- Chang, G.; Behr, H.; Goetz, M.A.; Hiley, A.; and Bigby, J. Women and alcohol abuse in primary care: Identification and intervention. *Am J Addict* 6(3):183–192, 1997.
- Chang, G.; Wilkins-Haug, L.; Berman, S.; and Goetz, M.A. Pregnant women with negative alcohol screens do drink less: A prospective study. *Am J Addict* 7:299–304, 1998.
- Chang, G.; Wilkins-Haug, L.; Berman, S.; and Goetz, M.A. Brief intervention for alcohol use in pregnancy: A randomized trial. *Addiction* 94(10): 1499–1508, 1999.
- Cherpitel, C.J. Breath analysis and self-reports as measures of alcohol-related emergency room admissions. *J Stud Alcohol* 50(2):155–161, 1989.
- Chick, J.; Ritson, B.; Connaughton, J.; Stewart, A.; and Chick, J. Advice versus extended treatment for alcoholism: A controlled study. *Br J Addict* 83(2):159–170, 1988.
- Cutler, S.F.; Wallace, P.G.; and Haines, A.P. Assessing alcohol consumption in general practice patients—A comparison between questionnaire and interview: Findings of the Medical Research Council's general practice research framework study on lifestyle and health. *Alcohol Alcohol* 23(6):441–450, 1988.
- Davidson, R., and Raistrick, D. The validity of the Short Alcohol Dependence Data (SADD) Questionnaire: A short self-report questionnaire for the of alcohol dependence. *Br J Addict* 81(2):217–222, 1986.
- Davis, D.A.; Thomson, M.A.; Oxman, A.D.; and Haynes, R.B. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 274(9): 700–705, 1995.
- Drummond, D.C. Alcohol interventions: Do the best things come in small packages? *Addiction* 92(4):375–379, 1997.
- Fleming, M.F., and Barry, K.L. A three-sample test of a masked alcohol screening questionnaire. *Alcohol Alcohol* 26(1):81–91, 1991a.
- Fleming, M.F., and Barry, K.L. The effectiveness of alcoholism screening in an ambulatory care setting. *J Stud Alcohol* 52(1):33–36, 1991b.
- Fleming, M.F.; Barry, K.L.; Manwell, L.B.; Johnson, K.; and London, R. Brief physician advice for problem alcohol drinkers. A randomized controlled trial in community-based primary care practices. *JAMA* 277(13): 1039–1045, 1997.
- Fleming, M.F.; Manwell, L.B.; Barry K.L.; Adams, W.; and Stauffacher, E.A. Brief physician advice for alcohol problems in older adults: A randomized community-based trial. *J Fam Pract* 48(5):378–384, 1999.
- Fleming, M.F., and Murray, M. *A Medical Education Model for the Prevention and Treatment of Alcohol Use Disorders*. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1998.
- Gentilello, L.M.; Donovan, D.M.; Dunn, C.W.; and Rivara, F.P. Alcohol interventions in trauma centers. Current practice and future directions. *JAMA* 274(13):1043–1048, 1995.



Gentilello, L.M.; Rivara, F.P.; Donovan, D.M.; Jurkovich, G.J.; Daranciang, E.; Dunn, C.W.; Villavoces, A.; Copass, M.; and Ries, R.R. Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Ann Surg* 230(4):1–11, 1999.

Gronbaek, M.; Henriksen, J.H.; and Becker, U. Carbohydrate-deficient transferrin—A valid marker of alcoholism in population studies? Results from the Copenhagen City Heart Study. *Alcohol Clin Exp Res* 19(2):457–461, 1995.

Helzer, J.E., and Pryzbeck, T.R. The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. *J Stud Alcohol* 49(3):219–224, 1988.

Hoeksema, H.L., and de Bock, G.H. The value of laboratory tests for the screening and recognition of alcohol abuse in primary care patients. *J Fam Pract* 37:268–276, 1993.

Huseby, N.E.; Nilssen, O.; Erfurth, A.; Wetterling, T.; and Kanitz, R.D. Carbohydrate-deficient transferrin and alcohol dependency: Variation in response to alcohol intake among different groups of patients. *Alcohol Clin Exp Res* 21(2):201–205, 1997.

Institute of Medicine, Division of Mental Health and Behavioral Medicine. *Broadening the Base of Treatment for Alcohol Problems*. Washington, DC: National Academy Press, 1990.

Israel, Y.; Hollander, O.; Sanchez-Craig, M.; Booker, S.; Miller, V.; Gingrich, R.; and Rankin, J. Screening for problem drinking and counseling by the primary care physician-nurse team. *Alcohol Clin Exp Res* 20(8):1443–1450, 1996.

Kahan, M.; Wilson, L.; and Becker, L. Effectiveness of physician-based interventions with problem drinkers: A review. *Can Med Assoc J* 152(6):851–859, 1995.

Kobak, K.A.; Taylor, L.H.; Dottl, S.L.; Greist, J.H.; Jefferson, J.W.; Burroughs, D.; Mantle, J.M.; Katzelnick, D.J.; Norton, R.; Henk, H.J.; and Serlin, R.C. A computer-administered telephone interview to identify mental disorders. *JAMA* 278(11):905–910, 1997.

Kristenson, H.; Ohlin, H.; Hulten-Nosslin, M.B.; Trell, E.; and Hood, B. Identification and intervention of heavy drinking in middle aged men: Results and follow-up of 24–60 months of long-term study with randomized controls. *Alcohol Clin Exp Res* 7(2):203–209, 1983.

Lott, J.A.; Curtis, L.W.; Thompson, A.; Gechlik, G.A.; and Rund, D.A. Reported alcohol consumption and the serum carbohydrate-deficient transferrin test in third-year medical students. *Clin Chim Acta* 276(2):129–141, 1998.

Manwell L.B.; Fleming M.F.; Johnson, K.; and Barry, K.L. Tobacco, alcohol, and drug use in a primary care sample: 90-day prevalence and associated factors. *J Addict Dis* 17(1):67–81, 1998.

Marlatt, G.A.; Baer, J.S.; Kivlahan, D.R.; Dimeff, L.A.; Larimer, M.E.; Quigley, L.A.; Somers, J.M.; and Williams, E. Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *J Consult Clin Psychol* 66(4):604–615, 1998.

Marlatt, G.A.; Baer, J.S.; and Larimer, M. Preventing alcohol abuse in college students: A harm-reduction approach. In: Boyd, G.M.; Howard, J.; and Zucker, R.A.; eds. *Alcohol Problems Among Adolescents: Current Directions in Prevention Research*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1995. pp.147–172.

Miller, W., and Sovereign, R. The check-up: A model for early intervention in addictive behaviors. In: Loberg, T.; Miller, W.R.; Nathan, P.E.; and Marlatt, G.A.; eds. *Addictive Behaviors: Prevention and Early Intervention*. Amsterdam, The Netherlands: Swets & Zeitlinger, 1989. pp. 219–231.

Monti, P.M.; Colby, S.M.; Barnett, N.P.; Spirito, A.; Rohsenow, D.J.; Myers, M.; Woolard, R.; and Lewander, W. Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *J Consult Clin Psychol* 67(6):989–994, 1999.

National Institute on Alcohol Abuse and Alcoholism. *The Physician's Guide to Helping Patients with Alcohol Problems*. NIH Pub. No. 95-3769. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, 1995.

Ockene, J.K.; Adams, A.; Hurley, T.G.; Wheeler, E.V.; and Hebert, J.R. Brief physician- and nurse practitioner-delivered counseling for high-risk drinkers: Does it work? *Arch Intern Med* 159(18): 2198–2205, 1999.

Ockene, J.K.; Wheeler, E.V.; Adams, A.; Hurley, T.G.; and Hebert, J. Provider training for patient-centered counseling in a primary care setting. *Arch Intern Med* 157(20):2334–2341, 1997.

Rowe, M.G.; Fleming, M.F.; Barry, K.L.; Manwell, L.B.; and Kropp, S. Correlates of depression in primary care. *J Fam Pract* 41(6):551–558, 1995.

Russell, M.; Chan, A.W.K.; and Mudar, P. Gender and screening for alcohol-related problems. In: Wilsnack, R.W., and Wilsnack, S.C., eds. *Gender and Alcohol: Individual and Social Perspectives*. New Brunswick, NJ: Rutgers Center of Alcohol Studies, 1997. pp. 417–444.

Russell, M.; Martier, S.S.; Sokol, R.J.; Mudar, P.; Bottoms, S.; Jacobson, S.; and Jacobson, J. Screening for pregnancy risk-drinking. *Alcohol Clin Exp Res* 18(5):1156–1161, 1994.

Saunders, J.B.; Aasland, O.G.; Babor, T.F.; de la Fuente, J.R.; and Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption. II. *Addiction* 88:791–804, 1993.

Schmidt, A.; Barry, K.L.; and Fleming, M.F. Detection of problem drinkers: The Alcohol Use Disorders Identification Test (AUDIT). *South Med J* 88(1):52–59, 1995.

Selzer, M.L.; Vinokur, A.; and Van Rooijen, L. A self-administered Short Michigan Alcoholism Screening Test (S-MAST). *J Stud Alcohol* 36(1): 117–126, 1975.

Skinner, H.A.; Holt, S.; Schuller, R.; Roy, J.; and Israel, Y. Identification of alcohol abuse using laboratory tests and a history of trauma. *Ann Intern Med* 101:847–851, 1984.

Soderstrom, C.A.; Smith, G.S.; Kufera, J.A.; Dischinger, P.C.; Hebel, J.R.; McDuff, D.R.; Gorelick, D.A.; Ho, S.M.; Kerns, T.J.; and Read, K.M. The accuracy of the CAGE, the Brief Michigan Alcoholism Screening Test, and the Alcohol Use Disorders Identification Test in screening trauma center patients for alcoholism. *J Trauma* 43(6):962–969, 1997.

Sokol, R.J.; Martier, S.; and Ager, J.W. The T-ACE questions: Practical prenatal detection of risk-drinking. *Am J Obstet Gynecol* 160(4): 863–870, 1989.

Soumerai, S.B., and Avorn, J. Principles of educational outreach (“academic detailing”) to improve clinical decision making. *JAMA* 263(4):549–556, 1990.

Spitzer, R.L.; Williams, J.B.; Kroenke, K.; Linzer, M.; deGruy, F.V. III; Hahn, S.R.; Brody, D.; and Johnson, J.G. Utility of a new procedure for diagnosing mental disorders in primary care: The PRIME-MD 1000 study. *JAMA* 272(22): 1749–1756, 1994.

Stauber, R.E.; Stepan, V.; Trauner, M.; Wilders-Truschnig, M.; Leb, G.; and Krejs, G.J. Evaluation of carbohydrate-deficient transferrin for detection of alcohol abuse in patients with liver dysfunction. *Alcohol Alcohol* 30(2):171–176, 1995.

Stauber, R.E.; Vollman, H.; Pessler, I.; Jauk, B.; Lipp, R.; Halwachs, G.; and Wilders-Truschnig, M. Carbohydrate-deficient transferrin in healthy women: Relation to estrogens and iron status. *Alcohol Clin Exp Res* 20(6):1114–1117, 1996.

Townes, P.N., and Harkley, A.L. Alcohol screening practices of primary care physicians in Eastern North Carolina. *Alcohol* 11(6):489–492, 1994.

U.S. Department of Health and Human Services. *National Household Survey on Drug Abuse: Population Estimates 1995*. DHHS Pub. No. 96-3095. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Administration, 1996.

U.S. Preventive Services Task Force. *Guide to Clinical Preventive Services*, 2nd ed. Baltimore, MD: Williams & Wilkins, 1996.

Wallace, P.; Cutler, S.; and Haines, A. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *BMJ* 297(6649):663–668, 1988.

Wallace, P., and Haines, A. Use of a questionnaire in general practice to increase the recognition of patients with excessive alcohol consumption. *BMJ* 290(6486):1949–1953, 1985.

WHO Brief Intervention Study Group. A cross-national trial of brief interventions with heavy drinkers. *Am J Public Health* 86(7):948–955, 1996.

Wilk, A.I.; Jensen, N.M.; and Havighurst, T.C. Meta-analysis of randomized controlled trials addressing brief interventions in heavy alcohol drinkers. *J Gen Intern Med* 12:274–283, 1997.